REGIONAL DISTRICT OF KOOTENAY BOUNDARY -
2020 APPLIED RESEARCH HOUSING PROJECT

Disaster Recovery Housing

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Publication Details

Project Team

- Tara Howse
- Ingrid Liepa
- Blake Glassford
- Lauren Rethoret
- Sarah-Patricia Breen

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EXECUTIVE SUMMARY

The 2018 Grand Forks flooding event highlighted the re-housing challenges that can occur in the wake of a disaster. With the goal of informing processes, guidelines, and policies to better plan for and support the transition from temporary to permanent housing after a disaster occurs, this research scanned disaster recovery best practices to identify and understand recovery housing approaches for consideration by the Regional District of Kootenay Boundary.

The Province of British Columbia is currently updating its emergency management procedures, including the *Emergency Program Act*. This update will address the gap in recovery planning, although available interim reports show a lack of focus on recovery housing. The new *Emergency Program Act* is anticipated to be tabled in Spring 2021. In addition to these provincial efforts, the federal government recently established a Task Force to assess the viability of a national flood insurance program, with a report anticipated in Spring 2022. The results of both these processes should be taken to account in local planning and decision making. This research identified three overarching takeaways:

1) Recovery for displaced households requires access to safe, secure permanent housing.
2) Recovery efforts can reduce or amplify existing housing issues.
3) The impacts of disasters on housing can be mitigated by advance recovery planning, clear communications, flexibility in senior government resources, and recognition that people who lose their homes or whose homes become uninhabitable need extensive supports.

Six themes emerged from the research that can help address challenges related to disaster recovery housing:

1) Have a recovery plan that includes processes explicit to housing.
2) Seek a high level of community and participatory engagement during planning activities.
3) Ensure clear communications that support coordinated efforts.
4) Have supportive governments and strong leadership.
5) Ensure residents, workers, and staff have access to a wide variety of social supports.
6) Develop local and flexible solutions.

To address recovery housing, the key takeaway of this research is that:

- Recovery is an integrated system that starts with planning.
- Plans needs to be locally developed and inclusive.
- Provincial and federal government supports are required for recovery efforts. These supports must be flexible and locally based.
- Mitigation of disaster risk/hazard can reduce government and household costs when disasters occur, but mitigation has limitations.
- Retreat will inevitably occur, and governments can affect whether it's planned and managed or left to occur in a haphazard manner.
- Addressing climate change will reduce the scale and frequency of disasters over time.

Three priority recommendations emerged from this research. It is important to note that additional resources at all levels of government will likely be required to support the activities associated with these recommendations. The region is on the traditional territories of multiple Indigenous peoples who should be consulted and included within these processes.

Priority Recommendations	**Government responsibility and jurisdiction**		
	Local	*Provincial*	*Federal*
Engage with local community	✓		
Prepare and plan for disasters	✓	✓	
Reduce severity of disaster through climate change mitigation efforts	✓	✓	✓

INTRODUCTION

Across the world, severe weather events are increasing in intensity and severity.[1] The Property and Casualty (P&C) insurance industry has long considered climate change and severe weather events as a top risk.[1] In Canada, there has been a "nearly unbroken string of major severed weather-related losses since 2009", with the expectation that this trend will not decrease anytime soon.[2] This has led to increased uptake of disaster management practices by governments[3] as they work to catch up to the disaster-risk research in academia and the insurance sector.[4]

The Regional District of Kootenay Boundary's Advisory Committee charged the research team with the following question: "*In a disaster event that removes housing units from the housing stock, what are best practices in disaster recovery housing that can support the most effective and healthiest transition of dislocated households from temporary to permanent housing?"*

Disaster-related research broadly covers four phases of the emergency management system,[5] although terminology may differ by organization[i]:

1) Mitigation
2) Preparedness
3) Response
4) Recovery

This research focused on the fourth phase – Recovery – to identify recovery housing approaches for consideration by the Regional District of Kootenay Boundary (RDKB). This inquiry stems from the experiences of the community of Grand Forks, which experienced devastating flooding in 2018. At the time of writing this report, Grand Forks is still in the process of recovery, both as a community and as individuals and families who were directly affected by the flood.

A disaster that creates a large influx of homelessness[ii] in a community that already has limited housing options or low vacancy rates can compound an already traumatic event as people seek to transition from the temporary housing into permanent housing. This situation is ongoing in Grand Forks.

The purpose of this report is to identify the common challenges and lessons learned from other disasters when there is a prolonged state of housing recovery, and to identify best practices to address those challenges and expedite the transition from temporary to permanent housing. The request for this research also comes from a desire to reduce revictimization of households in future disaster events and the recognition that the long-term use of temporary housing can contribute to additional trauma and delay community recovery.

The report is intended for a broad audience that includes elected officials, government staff, and individuals or organizations involved or interested in disaster recovery practices.

Report Structure

This report begins with a summary of the disaster recovery literature that identifies the key challenges of recovery housing, options for governments to address the transition to permanent housing, and best practices or lessons learned from recovery housing. It should be noted that disaster recovery is often presented as an integrated and holistic approach. Housing recovery is rarely treated as a separate process and is usually addressed more generally

[i] For example, mitigation can be used interchangeably with prevention. For the purposes of this research, the language has been adapted to mirror the Province of British Columbia's usage.

[ii] A "large influx" is an intentionally undefined as the exact number will vary by community. It is intended to be descriptive as opposed to prescriptive to allow for creative options to emerge. The RDKB consists of population centres (incorporated municipalities) ranging from the City of Trail (population 7,681) to Village of Midway (population 649), as well as unincorporated rural areas.

as part of community recovery. Following the literature summary is a review of the Province of British Columbia's most recent disaster recovery planning guidelines and a look at RDKB-specific considerations. A final summary highlighting priority actions and opportunities concludes this report.

Methodology

The research for this report had multiple components. It began with an environmental scan of literature that encompassed understanding of how disaster management is structured and carried out, the various jurisdictions and responsibilities of governments in Canada related to disaster management, and best practices related to disaster recovery. Where possible, details specific to recovery housing are emphasized. The literature review included material from urban planning, disaster response, climate science, emergency management, and change behaviour – all with a focus on housing. Documents reviewed included academic sources, case studies, government-funded evaluations, post-disaster reports, policy recommendations, and various forms of toolkits or guidebooks.

Disaster recovery associated with the following specific events was explored:

- California wildfires (2017–2020)
- Victorian bushfires, Australia, 2020
- Red River flooding (2011-2019)
- New Brunswick Emergency Measure Organization (EMO) (various events from 2013-2019)
- Grand Forks flooding, 2018
- Hurricane Harvey, 2017
- Kenow fire, AB, 2017
- Wood Buffalo fire, Fort McMurray, 2016
- Rock Creek fire, 2015
- City of Calgary flood, 2013
- Superstorm Sandy, 2012
- Johnsons Landing landslide, 2012
- New Zealand earthquake, 2011
- Chile earthquake, 2010
- Abruzzi, Italy earthquake, 2009
- Sichuan, China earthquake, 2008
- Hurricane Katrina, 2005
- Hurricane Hazel, Toronto, 1954

Conversations were held with key informants of the Grand Forks Boundary Flood Team, RDKB staff, and elected officials to understand how disaster management occurred in a local context, with a focus on housing recovery learnings and suggestions. These conversations were used to frame the information gathered from the literature, assist with localizing the best practices from case studies, and inform the recommendations that emerged.

Indigenous Context

The RDKB includes the traditional and unceded territories of the Sinixt Arrow Lakes People, the Okanagan Syilx People, the Secwepemc People, and the Ktunaxa People as well as the Métis Peoples. Housing recovery efforts need to consider the unique relationships and jurisdictional considerations that exist from treaties and reserve lands. Engagement with Indigenous people can be conducted to identify areas of concern and develop localized solutions.

Housing and Disaster Recovery

Overview

Until recently, there has been a recognized shortfall of government interest in disaster recovery. This gap has been noted by many agencies and is identified in disaster follow up assessments in places like Alberta, New Orleans, Mississippi, New York, and the State of Victoria, Australia. A greater emphasis on supporting recovery frameworks has now emerged, along with the recognition that recovery needs to be closely tied with mitigation and planning strategies within a community.[6] This is resulting in more frequent use of the tagline of "*Build Back Better*." The idea behind "Build Back Better" is to address the weaknesses that contributed to the disaster and increase resiliency within the community through infrastructure upgrades, planning tools, improving social inequalities, and new or revised economic development plans.[7]

As the understanding and acknowledgement of the costs associated with trauma, chronic disease, and mental health increases, it is noteworthy that recovery plans are now incorporating integrated approaches that extend beyond economic recovery.[6,8] Stronger calls are being made for the inclusion of equity considerations in resilience and disaster management planning.[9] As a community enters the recovery phase, if a recovery plan with clear and locally developed guidelines and communications for implementation does not exist, the community (often the local government) can be too overwhelmed to adequately address these needs. It is this lack of planning that contributes to a community's inability to recover effectively and can result in temporary housing solutions becoming long-term, even though they are not well-suited to being long-term solutions.[10] Housing is at the central point of this discussion.[4] When delays occur in transitioning people from temporary to permanent housing, delays in overall community recovery similarly follow.[11] Workforce needs may not be met as employees have no housing, or a neighbourhood may deteriorate and decline due to abandoned buildings.[11]

A final observation on disaster recovery is that there is no objective measurement on when recovery is complete, nor is there a set timeline for when it should occur.[6] Recovery for individuals will vary greatly[12] and some may never fully recover,[6] be it emotionally, physically, or economically.

Jurisdiction

Disaster management is a shared responsibility. In British Columbia (BC), it spans federal, provincial, Indigenous, and local governments, as well as non-profit organizations. Each organization provides various services and has different responsibilities. These can overlap and change as an event unfolds. This is not a comprehensive summary.

At the federal level, emergency management falls under the department of Public Safety Canada. The federal *Emergency Management Act*[13] sets out the roles and responsibilities of the Minister of Public Safety and Emergency Preparedness, including coordination with other levels of governments and ministries. The *Emergency Management Framework for Canada*[14] sets out guidelines and a common approach to emergency management initiatives for provinces to support resilient communities. The *Emergency Management Strategy for Canada: Toward a Resilient 2030*[15] is a guide aimed at strengthening Canada's ability to assess risks, prevent and mitigate risks, and prepare, respond, and recovery from disasters. In addition to high-level oversight of disaster management, the Royal Canadian Mounted Police, and the Canadian Armed Forces can be called upon to provide disaster response services. The federal government also provides funding to provinces, such as the *National Disaster Mitigation Program*[16] or *Disaster Financial Assistance Arrangements.*[17]

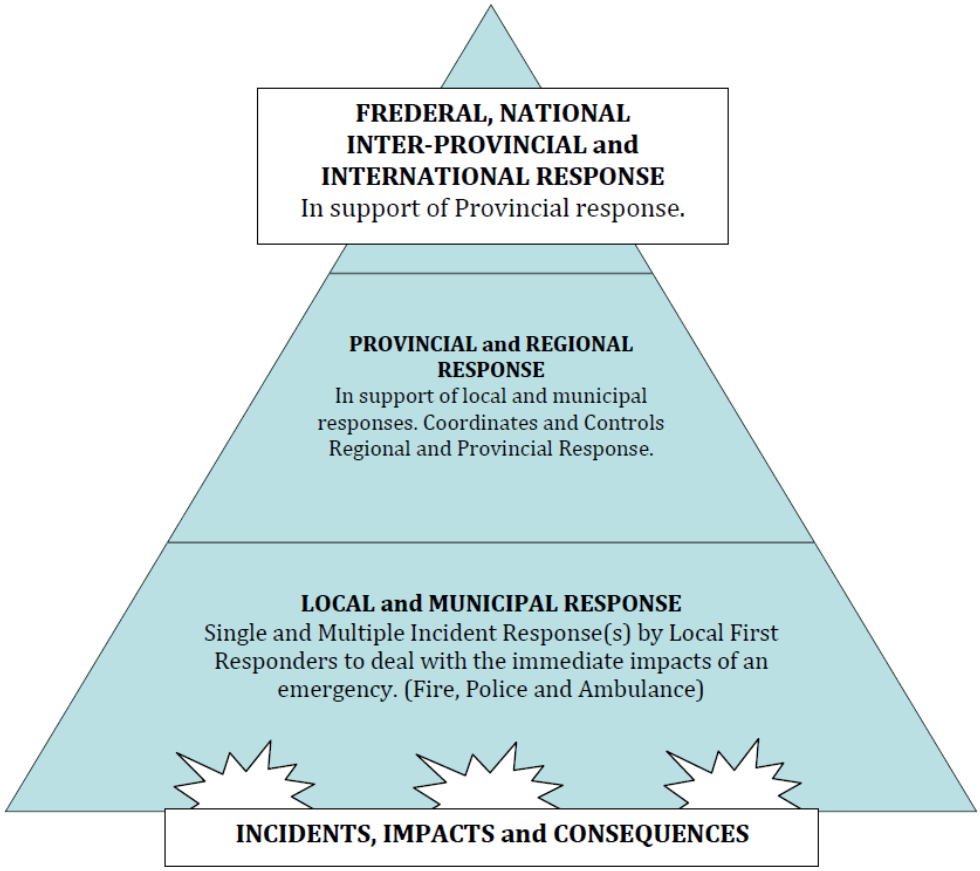
In BC, emergency management is coordinated by Emergency Management BC (EMBC) and falls under public safety. This coordination includes response, planning, training, testing, and exercising. EMBC works and coordinates with federal government, provincial ministries, Indigenous governments, local governments, industry, non-government organizations, and volunteers. Legislatively, the provincial *Emergency Program Act*,[18] which is presently being updated, provides the framework for emergency management. Various provincial strategies and guidelines, such as the *Flood Hazard Area Land Use Management Guidelines*,[19] also impact emergency management. Programs,

such as the *Flood Risk Assessment, Flood Mapping and Mitigation Planning*[20] and *Disaster Financial Assistance*[21] are available to local governments, homeowners, and business owners to mitigate disaster risk and assist in recovery. Funding streams and eligibility vary.

Local governments are the front-line managers during a disaster event and develop local response plans. The local plans are implemented by responders and local government staff.[22] When an event crosses into another community, such as the 2018 Grand Forks flood event that affected the City of Grand Forks and Electoral Area D, EMBC provides coordination and support services.[23] In advance of a disaster, local governments have the jurisdiction to implement initiatives to mitigate disaster risk, such as land-use planning, geohazard mapping, and development decisions.

Figure 1 provides an overview of jurisdictions during the response phase, as defined by the Province of New Brunswick;[iii] this mirrors BC's approach.

Figure 1: Jurisdiction during an emergency response[24]



[iii] A similar image for BC could not be found.

Common Disaster Housing Recovery Challenges

Across post-disaster assessments[iv] and housing recovery or re-housing programs,[v] four areas consistently emerge as impacting the transition from temporary to permanent housing:

1. Recovery planning
2. Communications
3. Senior government support and flexibility
4. Social needs

A lack of pre-planning for disaster recovery has been identified as the number one challenge.[25] Traditionally, disaster planning focuses on the urgent safety demands that are required during the response phase of disaster management. A community may have an evacuation or response plan that addresses immediate shelter needs but not a medium- or long-term plan to address housing. As noted above, without a well-thought out recovery plan a local government can easily become overwhelmed, especially if local government staff or officials have, themselves, lost a home.[10]

During the recovery phase, issues related to the lack of planning can manifest in two ways. The first can be attributed to internal (local government) processes related to land use, build permits, or bylaws. Existing regulations or zoning requirements can create stress for local government staff by increasing the administrative burden required to process requests, particularly if there are not exemptions specific to disasters (e.g., allowing small, interim housing on existing properties).[10] This additional administrative burden not only takes the focus off repairing critical infrastructure, but also slows overall housing recovery timelines.[26,27] This can also contribute to the second manifestation of lack of planning: residents' feelings of exclusion and anger. In the aftermath of a disaster, community input sessions may be suspended for expediency and NIMBYism can flare up as a result.[11] Delays in rebuilding housing impacts the community[28] and neighbour acceptance of housing rebuilds.[10] This is most noticeable when rental housing is introduced, and is particularly acute if the new housing is in the form of small or manufactured homes for temporary housing as a family rebuilds or when introducing a new form of housing development that does not align with neighbourhood aesthetic ideals.[29]

The second challenge, and closely related to a lack of planning, is confusing communications from governmental and non-governmental agencies involved in recovery. Disasters are not static. The onset of an event can happen quickly, the situation can rapidly evolve, which can contribute to confusion. When jurisdictions, responsibilities, and skills required for recovery responses are ill-defined,[30] overlapping priorities and powers can create different responses or decisions on issues, including what is required for housing.[8] Specific to housing recovery efforts, when communications are unclear or inconsistent, delays in coordinating rebuilds are more likely.[10,4] In some instances, inadequate training and communication challenges can result in staff being unsure of what information to share, creating stress and mental health issues for staff and volunteers.[31] For community members seeking supports or resources, misleading or incorrect information can also increase stress and mental health issues.[12]

A third common challenge in relation to housing recovery efforts is inadequate support or a lack of flexibility from higher level governments.[10,32] Lack of support includes (a) lack of funding or leadership to support communities in recovery planning efforts and/or (b) not supporting flexible funding and resources that the community has identified.[6] As a disaster shifts from response to recovery phase, resources from higher level governments and emergency relief organizations are typically scaled back and stopped,[4] leaving the local government and non-profit organizations to deal with housing recovery on their own.[8] When the responsibility shifts from higher levels of government and to local government or the non-profit sector to ensure people are adequately re-housed, it can

[iv] See Comerio, 2014 (#4) in References for an analysis of housing recovery programs using case studies.
[v] See the following in References: RAPIDO housing program out of Dallas (Hazard Reduction Center, 2015, #12), Katrina Cottages program (Brown, 2015, # 17; Thompson, 2019, #14; Siders, 2019, #26), and evaluations of U.S. Department of Housing and Urban Development housing and housing recovery programs (Abt Associates, 2009 #11; Dunton & Brown, 2019, #20).

take up to 10 years for people to move out of temporary housing situations.[4] In BC, provincial disaster housing relief is focused on short-term, temporary housing (e.g., hotel stays). This narrow focus restricts the ability of communities to localize solutions to address long term local needs.

A lack of flexible, supportive government support impedes locally relevant solutions. Low vacancy rates, pets, family sizes and ages, allergies, transportation access, and personal issues (e.g., mental health or relationship issues) further complicate finding suitable temporary rental housing.[32,12] For example, in the case of Grand Forks, the City's low vacancy rate could not support the post disaster-related demand for rentals. At the time of the flood, Grand Fork's vacancy rate was estimated at less than 1%.[vi] For comparison, New York City had a vacancy rate of 3.4% at the time of Superstorm Sandy in 2014.[33] A locally developed funding program was proposed for Grand Forks that would incentivize homeowners who were willing to convert a garage or suite into a rental space. However, the project was declined by the Province of British Columbia as it did not fit the parameters of its relief funding model.[12] This lack of flexibility from higher-level government forced people into longer-term stays in hotels[34], crowded housing conditions, and into unwinterized RVs.[12] In the case of the latter, the Province of British Columbia did provide funds for propane.[12]

Lastly, within disaster recovery, underestimating the importance of housing on social or human needs[32] can lead to long-term, chronic health issues, and increased rates of gender-based and family violence.[6] The length of time for a community or an individual varies greatly. When the social or human needs are underestimated, be it time or intensity, the burden of those needs ultimately falls to local governments and local service organizations to address.[12] The physical and mental health toll of living in inadequate housing is well documented in other literature and disciplines. For example, as of 2017, the Lake St. Martin First Nation in Manitoba experienced the deaths of at least 92 community members since being evacuated by a 2011 flood event. The majority of these deaths have been associated with living in a hotel for five years, causing physical illness due to diet changes or stress-related impacts, such as depression.[35] In the RDKB, families are still struggling to recover from the 2015 Rock Creek fire.[12,36] Although it is too early to tell of long-term trauma impacts in Grand Forks, two years following the flood there are still 110 people without a home.[12] It is presumed there are more flood-impacted people living in substandard housing conditions, especially those who are low-income renters. This raises questions around inequity in recovery housing[34] as provincial rebuilding supports target homeowners only.[12]

Key takeaways:

- Recovery for households is based on having access to safe, secure permanent housing.
- Recovery efforts can reduce or exacerbate inequities in a community.
- Advanced recovery planning, clear communications, flexibility with senior government resources, and recognition that people need extensive supports can mitigate the impacts of disasters.

Disaster Housing: Best Practices

Preventing the of loss of homes should be the ultimate goal of governments in disaster management and more specifically in recovery housing efforts.[3] It has been clearly demonstrated that prevention methods and mitigation reduce costs for governments.[37] Estimates vary, from general savings of six dollars for every dollar spent on mitigation to four dollars for every dollar spent when buildings exceed minimum, United States (U.S.) standards.[37,vii] There are two primary areas of response available to governments seeking to improve prevention, both of which could be complementary and incorporated into planning processes: 1) eliminate human-caused impacts, or 2) adapt to the threat. Both are discussed below and followed by a summary of the Best Practices that were identified.

[vi] No formal rental data exists for the community. This figure was relayed during a conversation with a key stakeholder and is based on their conversations with individuals and organizations in the community (2020).
[vii] BC quotes the $6 savings; this was based on a U.S study by the National Institute of Building Sciences (see Reference #37).

Best Option: Eliminate human-caused impacts the threat

Although it may seem oversimplified, it is worth emphasizing that the best way to reduce the need for recovery housing is to prevent the disaster from occurring in the first place. Disasters occur for a number of reasons, and the intensity, severity, and occurrences continue to increase, forcing governments to take notice and to invest in disaster risk reduction strategies.[3] The insurance industry has long recognized the impacts of climate change on their profits and supports related research and mitigation programs across the country.[viii] Throughout the disaster management literature, climate change is noted as increasing the occurrence rates and severity of disasters, but there is no mention of the causes of climate change or how to mitigate climate change to prevent disasters. This includes BC's update report[38] on their emergency management legislation updating process. The report highlights climate change as a driver but does not suggest addressing human-caused climate change impacts and focuses on using land-use and development decisions (i.e., local governments) for risk reduction.

This research was constrained to understanding disaster recovery housing. Political sciences, economic policies, and development studies were beyond the scope. Nonetheless, it is worth noting that climate change is a result of human activities and the impacts of these activities are intricately connected to, or causes of, natural disasters. One emergency planner went so far as to say there is "no such thing as a 'natural disaster'", noting that all disasters are a result of human-made infrastructure being placed within a natural environment.[39] For example, there is ample research demonstrating how industrial logging can impact slope stability, runoff, and watersheds, which can lead to increased flooding.[ix] In regards to wildfires, they are burning hotter and faster due to climate change impacts on temperature and soil moisture.[40] The above examples highlight that any discussion around prevention, including managed retreat, accommodation, or resistance efforts, should incorporate and recognize how human activities are contributing to disasters.

Next best option: Adaptation

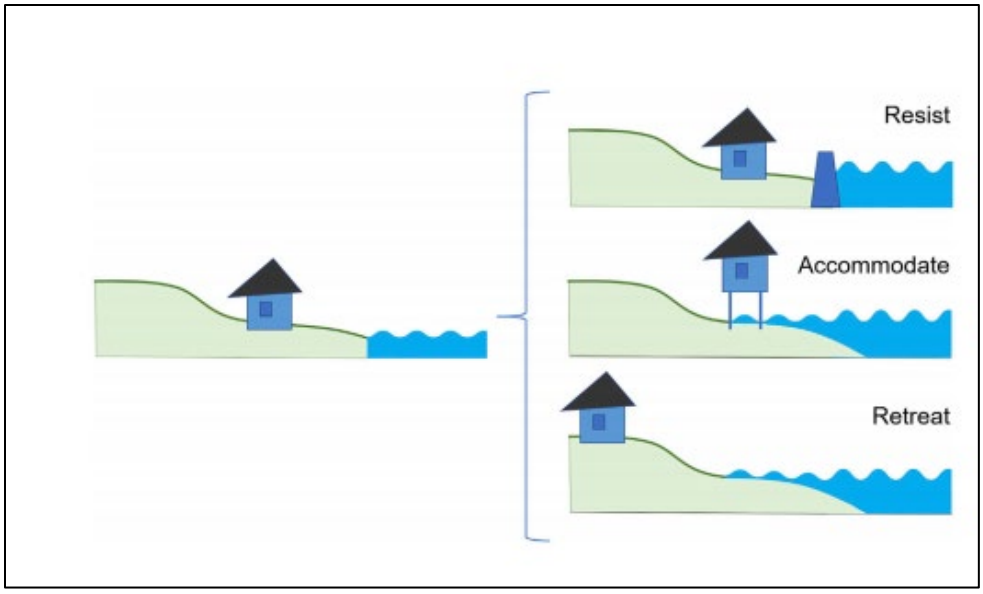
Adapting to the threat, or learning to live with it[28], can take the form of resistance, accommodation, or retreat, as illustrated in Figure 2.[x]

Figure 2: Adaptation Categories.[41]

[viii] For example, the *Intact Centre on Climate Adaptation* (https://www.intactcentreclimateadaptation.ca/) or the *Institute of Catastrophic Reduction* (https://www.iclr.org/) .

[ix] Deforestation removes the trees that provide shade to slow down snow melt. UBC researcher Younes Alila has demonstrated this relationship, noting that deforestation at least doubles, if not quadruples, the number of floods (see Green & Alila, 2012, *A paradigm shift in understanding and quantifying the effects of forest harvesting on floods in snow environments*)

[x] PARA provides another form of classification of actions: Protect, Accommodate, Retreat, Avoid; however, much of the literature, including the State of Victoria, tends to align with the nomenclature of "resist, accommodate, or retreat". Avoidance tactics could fall under retreat or accommodation, such as zoning to disallow building in high hazard zones.



Resistance attempts to control the disaster through engineering structures or systems, such as the diking system along the Fraser River Delta that protect the communities from flooding.[9] These options are costly and require extensive collaboration between partners and jurisdictions. In the case of the Fraser River Delta, there are 40 local, provincial, and federal partners involved in maintaining the system. In addition to cost and logistics, a limitation of resistance tactics is that they are usually engineered to withstand a certain threshold (e.g., a one in 200-year flood event), and will fail when that threshold is surpassed.[9] In the face of climate change, structures that were built decades ago may not be suitable for the reality of today or the future. In Grand Forks there have been three floods in the last five years that have exceeded established flooding criteria. One flood event (2018) was a one in 200-year flood, while the other two (2017 and 2020) were one in 20-year floods.[12]

Accommodating[9], or learning to live with disaster[28], involves solutions that typically put the onus on the individual homeowners to participate in programs or address strategies to reduce the amount of damage to the dwelling. These include programs such as FireSmart[xi], sprinkler systems[xii], or installing sump pumps[xiii] and backwater valves[xiv]. These programs can be subsidized by government and are the go-to recommendation of the insurance industry,[xv] including promotion through insurance-industry funded research institutes.[xvi] These programs have been shown to reduce the costs associated with disaster and, in the case of fire response, to reduce fire fighter deaths.[42]

Managed retreat is a form of adaptation that provides long-term risk reduction and the potential for community transformation.[41] It is the counterpart for "build back better".[xvii] The primary criticisms of adaptation tactics, like accommodation and resistance, are that they are shorter-term and only provide relief within the constraints of current projections.[41] As climate change intensifies, it is becoming increasingly difficult to accurately evaluate and

[xi] See, for example, *BC FireSmart* at https://firesmartbc.ca/
[xii] See, for example, *Home Fire Sprinkler Coalition Canada* at https://homefiresprinklercanada.ca/
[xiii] See, for example, Public Safety Canada. (2011). *Floods, What to do?* Government of Canada.
[xiv] See, for example, BC *Getting Ready Before a Flood* at https://www2.gov.bc.ca/gov/content/safety/emergency-preparedness-response-recovery/preparedbc/know-your-hazards/floods/before-flood
[xv] See, for example, the Co-operators General Insurance Company video on sprinkler systems at https://youtu.be/cZCXvNfJkTs
[xvi] For example, the Institute of Catastrophic Loss Reduction was established through the Canadian P&C industry and the Intact Centre on Climate Adaptation is funded by Intact.
[xvii] Including BC, Alberta, and Manitoba.

project impacts, such as what occurs in hazard mapping.[9] When done in conjunction with managed retreat planning, resistance and accommodation techniques can buy the necessary time required for thoughtful planning and social reform, along with the required logistical considerations.[41]

There are obvious barriers to managed retreat that arise from individual and collective belief systems around property rights and sense of place.[41] However, it is not impossible. Retreat occurred in Canada as early as 1954 in the City of Toronto's response to Hurricane Hazel. The City purchased and removed 337 homes, cottages, and trailers, and expropriated at least another 530 properties. The affected area was then rezoned to disallow housing and turn it into greenspace.[9] Other communities have rezoned former disaster areas to restore wetlands, provide habitats targeted at endangered species, or create public recreational and park spaces.[41]

In addition to managed retreat there is also unmanaged retreat – a process that may occur when a recovery process is not adequately supported.[41] Unmanaged retreat results from one of the two decisions made at the individual level: stay and rebuild or leave.[4] In the decade after Hurricane Katrina, New Orleans had tens of thousands of abandoned properties as a result of rising insurance premiums, costs associated with multiple disasters, and falling real estate costs. As more homes were abandoned, a loss of property tax revenue contributed to difficulties for the municipality to provide services or cover other adaptation expenses.[41]

Additional concerns with unmanaged retreat and housing recovery involve the inability of businesses to reopen because their workforce is unable to return to their homes.[11] After the 2015 Rock Creek fire, approximately 30 households left the community instead of rebuilding. [12] This is an issue of concern in Grand Forks; however, there has been no confirmation of the number of people who have left the community as a result of the floods.[12] There are instances of people, particularly renters and low-income seniors, who have been unable to find permanent housing in Grand Forks, which may lead to households leaving.[34]

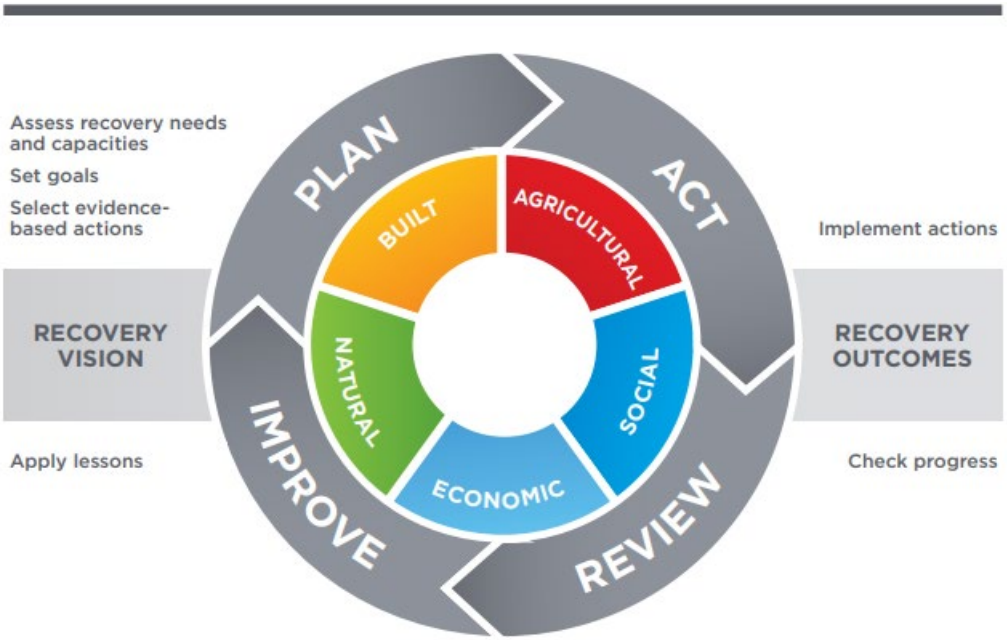
Best Practices Themes

Lessons learned from the literature review on housing recovery issues consistently fell within six broad themes:

1) Have a plan that includes recovery processes.
2) Seek a high level of community and participatory engagement during planning activities.
3) Ensure clear communications that support coordinated efforts.
4) Have supportive governments and strong leadership.
5) Ensure access to a wide variety of social supports, including recovery workers and local government staff.
6) Engage locally developed and flexible solutions.

Pre-disaster planning emerged consistently as the top recommendation, noting the need for an integrated and dynamic system. Figure 3 illustrates this integrated and dynamic model for disaster recovery planning, showing how components of the system are inter-related and impact one another.

Figure 3: Planning processes[43]



The six best practice themes listed above spanned across disaster types. These themes and related actions were presented in the literature as either a best practice that facilitated recovery housing from temporary to permanent, or as a lesson to be learned or recommendation to improve recovery housing processes in the future. Table 1 demonstrates the consistency of these themes across seven different types of disasters. An emphasis on advanced recovery planning is seen across the cases. For example, New Brunswick's recovery manual for homeowners[44] is a clear communication guide that is a result of pre-recovery planning.

Table 1: Best practices themes across seven disasters case studies

	Victorian Bushfires	City of Calgary Flood	Kenow Fire (Waterton Lakes National Park)	Wood Buffalo/ Fort McMurray Wildfire	New Brunswick EMO	Comerio	Hurricane Katrina	Superstorm Sandy
Plan for recovery	X	X	X	X	X	X	X	X
Engage community	X	X	X	X	X	X	X	X
Clear communications	X	X	X	X	X	X	X	X
Supportive government	X	X	X	X	X	X	X	X
Social supports	X	X			X	X	X	
Local solutions	X	X	X	X	X	X	X	X

Recognized as a leader in disaster recovery efforts[8], the state of Victoria, Australia puts the emphasis of recovery efforts on having a local and flexible system with access to secure funding, and includes housing as an element of that system.[6] Through dedicated recovery workers in both government and non-government agencies, people are able to access recovery supports, such as housing, through four strategic priorities[6]:

1) Deliver people and community-centred recovery.
2) Strengthen recovery through better emergency management planning.
3) Streamlined and flexible recovery system.
4) Support the recovery workforce.

Key takeaways:

- Recovery is an integrated system that starts with planning.
- Plans needs to be locally developed and inclusive.
- Provincial and federal government supports are required for recovery efforts. These supports must be flexible and locally based.
- Mitigation of disaster risk/hazard can reduce government and household costs when disasters occur, but mitigation has limitations.
- Retreat will inevitably occur, and governments can affect whether it's planned and managed or left to occur in a haphazard manner.
- Addressing climate change will reduce the scale and frequency of disasters over time.

BC Disaster Recovery Updates: Review & Assessment

The Province of British Columbia (BC) has acknowledged a gap in information within disaster recovery and BC's emergency management process.[45] It was recognized that while the response phase of disaster management is well-developed, the recovery phase is lacking supports.[xviii] For example, the previous 'how to do' recovery guidance document was a five page pamphlet with no plan to address recovery housing.[12] In addition, there were no identified financial resources available through Emergency Management BC for recovery purposes. As a result of this gap, BC is updating its emergency management procedures, including the *Emergency Program Act* (EPA),[45] which is anticipated to be tabled at the Spring 2021 legislative sitting.[46] A report on the flood and flood recovery experiences of the residents of Grand Forks and those managing emergency services at the RDKB was prepared and submitted to the Province of British Columbia to inform updates to the Emergency Management Act.[12] This submission was not released to the Research Team but it was incorporated into *What We Heard*, a provincial update released in late 2020.[38] This update report was a summation of contributions from around the province, providing guidance on the direction of the intended new legislation. The report focuses on legislative changes to be considered for the new Act. It was noted, by local governments, that recovery funding and post-disaster recovery plans are needed.

Two provincial reports related to recovery were available for review: *Interim Provincial Disaster Recovery Framework*[45] (interim report) and the *Recovery Guide for Local Authorities and First Nations*[47] (the Guide). Both promote a "build back better" approach. The interim report conducted research and engaged input from stakeholders and First Nations governments. It is recognized as a living document that will be updated and superseded by the modernized EPA. The Guide was published shortly after the interim report and is intended for local governments and First Nations to use for implementing their recovery efforts. Following best practices, the interim report included an emphasis on integrated, multidisciplinary, and locally based teams to deliver a wide array of services that incorporate the emotional and mental health concerns of disaster-impacted residents and the community. Although the documents share many similarities, there are three key areas of divergence between them that will affect disaster recovery efforts in the future:

1) Flexibility: A common recommendation within the disaster recovery literature on best practices, flexibility was identified as a guiding principle within the interim report[47], but was notably missing from the Guide.[47]

[xviii] The *Interim Provincial Disaster Recovery Framework* report notes that the "current EPA, coupled with federal legislation, highlights preparedness and response, but does not provide a robust framework for recovery responsibilities".

2) Permanent housing: Another notable omission from the Guide is the transitioning of people from temporary to permanent housing. Aside from one note that permanent housing "may" be a focus of long-term recovery activities, the housing needs mentioned in the report are all in reference to interim or securing initial temporary housing.

3) Equity: Following best practices, BC incorporated equity concerns and the use of intersectionality[xix] within the interim report, but this emphasis is missing in the Guide, which means this could be overlooked when planning or engagement activities occur.

Taken together, these areas represent three of the four challenges identified in the housing recovery literature: lack of flexibility to address local housing needs, lack of planning for recovery housing, and underestimating the social needs by ignoring the intersecting impacts that increase inequity, specifically in relation to housing.

RDKB Considerations

This section considers local RDKB needs and plausible disaster scenarios. While projecting community-specific risks and concerns is outside the scope of the project, there are three primary disaster types that RDKB communities should be cognizant of in relation to loss of housing stock: flooding, wildfire, and slope stability. Although there are similarities between each of these (e.g., displacement of people), there are also differences in what those plans or immediate recovery effort priorities should be (e.g., rate of destruction).

General Disaster Housing Considerations

The impetus for this research resulted from the experiences of re-housing displaced residents of Grand Forks following the 2018 flood, which, unfortunately, are not unique within British Columbia or Canada. Recovery housing efforts in Grand Forks were stymied by the compounding effects of (a) provincial and federal governments' standardized approaches inhibiting flexibility for localized solutions and (b) delays or refusals of insurance payments.[12] In regard to the former, the provincial government is taking steps to revise their emergency management processes.[xx] Until the revised legislation is released, it is difficult to speculate on what improvements are needed. However, a review of the Guide shows that recovery housing is missing, as is an emphasis on local and flexible solutions that consider equity concerns, suggesting that these may remain areas of concern.

In response to insurance payments, the federal government announced a Task Force to assess the viability of a national flood insurance program, with a report anticipated in Spring 2022.[48] In addition to the concerns of insurance payouts for flood events, a trend is occurring in rural Canada where access to fire insurance for homeowners is becoming unaffordable due to new guidelines that do not factor in rural contexts.[49]

Over the course of multiple stakeholder conversations, it was noted that the RDKB may be a leader in disaster management practices in BC and in relation to rural responses to disasters. Due to the confluences of various geological features (e.g., Granby River and Kettle Valley River convergence), the RDKB averages 96 days per year in a state of emergency in comparison to other regional districts that average around 30 days per year.[12] This statement is a reflection of comments from stakeholders and based on the high volume of inquiries received by RDKB from other local governments.

During stakeholder conversations, it was expressed that a toolkit or step-by-step guidebook would be helpful. However, the variations amongst communities and disasters are too great to account for every permutation and foreseeable eventuality within the scope of this research. The degrees of differences between disasters and their

[xix] Intersectionality is a form of analysis that allows for understanding of how inequities impact people in different and compounding ways based on personal identity factors, including but not limited to race, socioeconomic status, gender, orientation, ethnicity, or disability.
[xx] See previous section *BC Disaster Recovery Updates*.

impacts on dwellings – combined with a community's needs, barriers, and other localized realities – means that local communities must create their own processes and solutions.[39]

The solutions to recovery housing must begin prior to a disaster occurring, identifying land hazards, zoning hurdles, and rehousing opportunities, taking into account the various inequities that exist, including access to insurance, homeownership versus rentals, socio-economic concerns, and a host of safety issues that may arise or be exacerbated by a disaster.[39]

It is recognized that local governments, particularly rural governments, have limited resources and capacity to initiate and implement large community planning processes. Increased supports to local governments and simplifying access to planning initiatives would allow local governments to better prioritize recovery planning activities. For example, in BC, local governments apply to the provincial government for grant funding to conduct geohazard mapping.[50] Instead of an equitable distribution of funds that allows local government a simplified process to access these funds, it was reflected that the grant format creates competition amongst governments (Regional Districts and Municipalities) and drains resources from small and understaffed rural communities as they compete with large municipalities who have the time and staffing to dedicate to proposal writing.[12]

Disaster-specific Housing Considerations

All three of the primary disaster types of interest to the RDKB (flood, fire, and geohazard):

- Need localized, community planning processes to identify general concerns, number of potential housing units lost, disproportionate impacts on populations, land use zoning opportunities, and to clarify communications and coordination efforts, and resources available or missing.
- Are reliant on the expediency of insurance payouts to facilitate recovery efforts – but tighter restrictions by insurers are limiting access to insurance.
- Require re-entry protocols to identify health and safety concerns.
- Are vulnerable to increased climate change impacts.

However, between the three types of disasters there are differences in timelines, level of destruction, and access to insurance. Landslides and fires tend to occur rapidly, sometimes with little to no warning. Typically, they finish as quickly, but smoldering or environmental hazards or concerns may delay re-entry. Flooding can be a longer event, typically occurring over several weeks during spring runoff as waters levels rise and recede, but also can occur rapidly in a flash-flood scenario.

The level and type of destruction will vary between places, the types of disasters, and other contextual factors. Fires tend to burn and completely destroy a dwelling, requiring a rebuild.[12] Although there are clearly instances where a flood or land slide will sweep away a house, more often there is a level of destruction that leaves a house or property in varying states of habitability. This means some homes may require a complete rebuild and others may only require renovations,[12] which adds a level of complication when trying to create a standardized response.

The broad range and types of destruction impact insurance payouts.[39] With clear evidence that a fire destroyed the house, fire insurance can be paid out within weeks, sometimes even while the emergency is still in the response phase.[12] In comparison, Grand Forks residents continue to fight with insurance providers two years later, often trying to assess whether the damage was a result of flood waters or was pre-existing. As payouts are waited on, delays in renovations can cause increased mould concerns.[12] In the case of the Johnsons Landing slide that occurred in the Regional District of Central Kootenay in 2012, some are still having issues with payouts as insurance companies question whether it was flood or debris at fault.[12]

Just as the impacts of a disaster are varied in devastation and scope, so too are the re-entry considerations that a post-disaster assessment must consider prior to allowing residents back to the site or to commence recovery plans. Although each disaster will have different levels of concern for various issues, the primary concerns and considerations for recovery housing and rebuilding are:

1) Land access is a primary need for housing and can be a restraint for some communities, notably for those that have floodplains to contend with or are constrained by geological features, such as mountainous terrain.
2) Slope stability is often associated with flooding impacts, but fires have also been noted as impacting slope stability[39] and limiting where a house can be safely rebuilt.[28]
3) Soil contamination concerns can result from fire, flood, or slope stability events and is compounded by pollutants and hazardous materials[39], which can lead to delays in rebuilding for long-term housing.
4) Air quality is a major concern after fire events[8] but both slope stability-related events and flooding can churn up air quality issues.[39]
5) Mould can cause extreme damage to dwelling units[12] and is a result of excess moisture. Deciding on when people can safely re-enter their home after a flood or slope-stability event will depend on mould levels.
6) Critical infrastructure damage can occur in any event and impact local government infrastructure,[39] as well as business or residential infrastructure (such as flooding septic systems or contaminating wells[51]).

Other Considerations

This research was done in conjunction with a report on rural market housing in the RDKB and in parallel to the provincially mandated housing needs assessment.[34] These two reports highlight four key areas of additional consideration specific to the RDKB in relation to recovery housing concerns:

1) *Older housing stock* will be susceptible to greater damage due to structural concerns and/or lower standards of preventive methods incorporated into the original dwelling (e.g., sprinkler systems; basement window construction and placement).
2) *Low vacancy rates* mean fewer options for temporary housing plus higher rental rates in an already high rental rate region.
3) *Higher construction costs* and the labour shortage may result in the inability of the local building community to respond to a high demand for housing development.
4) *Suitable land to build* will vary throughout the region but some communities have no or a limited land base to expand to accommodate managed retreat.

Summary of Opportunities & Actions

This research asked the question, "*In a disaster event that removes housing units from a community's housing stock, what are best practices in disaster recovery housing that can support the most effective and healthiest transition from temporary to permanent housing?"* The focus on disaster recovery with an integrated and people-centred approach is relatively new yet becoming the status quo in recent disaster recovery recommendations. As one stakeholder commented during a conversation "no one should die because of policy".

Three priority recommendations have emerged from this research that governments can take to effectively address recovery housing. Governments include local, provincial, and federal, with each having different jurisdiction and responsibilities. As noted under Indigenous Context, there are no First Nations reserves or treaties in the RDKB. All levels of government should engage in consultation. Table 2 identifies the level of government that should be involved for each recommendation.

Table 2: Recommendations by government jurisdiction

Priority Recommendations	Government responsibility and jurisdiction		
	Local	*Provincial*	*Federal*
Engage with local community	✓		
Prepare and plan for disasters	✓	✓	✓
Reduce severity of disaster through climate change mitigation efforts	✓	✓	✓

Through a literature review and stakeholder conversations, this report identified six themes for best practices related to recovery housing. These themes are presented to address the commonly recognized challenges of (a) lack of planning, (b) lack of clear communications, (c) lack of support and flexibility in government programs, and (d) underestimating social and human needs, all of which affect the transition from temporary to permanent housing after a disaster. The best practices themes for local governments are:

1) Have a recovery plan that includes processes explicit to housing.
2) Seek a high level of community and participatory engagement during planning activities.
3) Ensure clear communications that support coordinated efforts.
4) Have supportive governments and strong leadership.
5) Ensure residents, workers, and staff have access to a wide variety of social supports.
6) Develop local and flexible solutions.

BC has recognized the need to improve its disaster recovery systems that are presently undergoing a review and update. Based on the interim report, housing remains a gap that needs to be explicitly recognized. For local governments looking for an existing toolkit or step-by-step guide, none currently exist. Creating a guide that addresses every local reality would prove impossible. Instead, the emphasis needs to be on a locally driven community recovery plan. The solutions to recovery housing must begin prior to a disaster occurring and identify land hazards, zoning hurdles, and rehousing opportunities through community-focused planning processes. Recovery planning must also take into account the various inequities that exist, including access to insurance, homeownership versus rentals, socio-economic concerns, and a host of safety issues that may arise or be exacerbated by a disaster.

Table 3 provides a list of actions that can be taken. Although most are within the jurisdiction of local government, the actions require additional resources and supports from senior levels of government to implement, particularly in rural and communities where there can be limited resources and staffing. Senior governments have a responsibility to develop the structures to prioritize recovery initiatives, which includes streamlining funding opportunities to conduct community engagement planning processes and geohazard mapping.

Table 3: Summary of Actions

Best Practice	Action	Challenges Addressed			
		Planning	*Communication*	*Senior government support*	*Social Needs*
1) Plan for recovery					
	Make a recovery plan	✓	✓	✓	✓
	Adopt inclusive and equity-focused principles			✓	✓
	Update zoning to allow recovery housing, such as tiny homes and temporary dwellings	✓	✓	✓	

Best Practice	Action	Challenges Addressed			
		Planning	*Communication*	*Senior government support*	*Social Needs*
	Waive building permits for temporary accommodations	✓	✓	✓	
	Waive planning process for temporary accommodations	✓	✓	✓	
	Restrict building in hazard zones (e.g., floodplains)	✓	✓	✓	
	Conduct geohazard mapping	✓	✓		
2) Engage community					
	Ensure inclusive engagement	✓	✓	✓	✓
	Start before a disaster	✓	✓	✓	✓
	Develop volunteer opportunities and guidelines for local resident action (e.g., firefighting)	✓	✓	✓	✓
3) Clear communications and coordination					
	Conduct post-disaster assessments efficiently and communicate results with community		✓		✓
	Establish clear guidelines for property re-entry	✓	✓		✓
	Clarify jurisdiction and responsibility	✓	✓		
	Assess current processes to ID gaps/areas for improvement	✓	✓	✓	✓
	Establish local recovery task force with a housing mandate	✓	✓	✓	✓
	Ensure long-term housing is clearly identified	✓			✓
	Clarify insurance requirements (or restrictions)		✓		✓
4) Government support and leadership					

Best Practice	Action	Challenges Addressed			
		Planning	*Communication*	*Senior government support*	*Social Needs*
	Reduce greenhouse gas emissions	✓	✓	✓	
	Continued research and implementation of recommendations to address human-caused impacts to natural disasters (e.g., forestry; cattle grazing)	✓	✓	✓	
	Prioritize and fund recovery planning	✓	✓		✓
	Support locally developed solutions	✓		✓	✓
	Allow for rental solutions	✓	✓	✓	✓
	Support capacity building within local government	✓	✓	✓	✓
	Prioritize and increase funding to support geohazard mapping for all communities				
5) Social supports					
	Develop wellbeing programs for recovery leaders and practitioners	✓		✓	✓
	Adopt a people-centred approach	✓	✓	✓	✓
	Integrate social supports in all aspects of recovery	✓		✓	✓
6) Local and flexible					
	Develop local solutions	✓	✓	✓	✓
	Use technology for re-entry inspections		✓	✓	
	Support prevention programs (e.g., FireSmart; flood proofing)	✓	✓		

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